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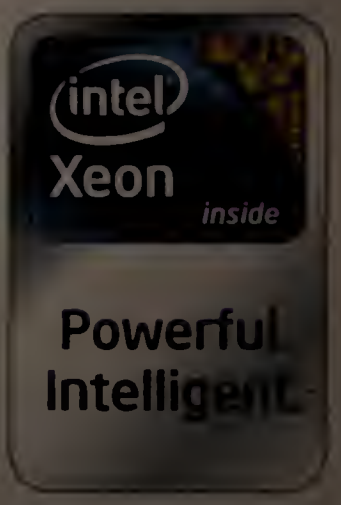

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P.O. Box 9171
492 Old Connecticut Path
Framingham, MA 01701-9171
(508) 879-0700
Computerworld.com

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Jamie Eckle, Preston Gralla, Tracy Mayor

CONTACTS

Phone numbers, email addresses and reporters' beats are available online at *Computerworld.com* (see Contacts link at the bottom of the home page).

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HeadsUp

KEVIN ROFIDAL / UNITED STATES COAST GUARD

Four years ago, a bridge collapse killed 13 people and injured 145 along I-35W in Minneapolis.

FUTURE WATCH

Sensors Could Avert Bridge Disasters

A UNIVERSITY OF MARYLAND researcher has developed inexpensive wireless sensors that could avert the kind of bridge collapse that killed 13 and injured 145 along I-35W in Minneapolis four years ago.

"One of every four U.S. highway bridges has known structural problems or exceeded its intended life span. Most only get inspected once every one or two years. That's a bad mix," Mehdi Kalantari, an electrical engineering researcher at the university, said in a statement late last month.

Kalantari's tiny wireless sensors monitor a bridge's structural health, such as strain, vibration, flexibility and cracking. The sensors transmit minute-by-minute data to a central computer that analyzes the data and instantly warns officials of possible trouble.

The professor founded a start-up, Resensys LLC, to ramp up production of the devices, which is slated to begin in September.

The sensors, which cost about $20 each, are rugged and could last more than a decade, Kalantari said. An average-size highway bridge would need about 500 sensors, for a total cost of about $10,000.

Newer "smart bridges," such as the I-35W replacement in Minneapolis, have wired networks of sensors. But Kalantari said the cost of wired systems is too high for use on older spans.

"A wired network will cost at least 100 times more than a wireless alternative, and that's simply unaffordable given the strain on local, state and federal budgets," he said.

– *Mitch Betts*

DATA PROTECTION

Health Insurer Encrypts All Stored Data

Responding to the theft of 57 hard drives in 2009, BlueCross BlueShield of Tennessee has completed a $6 million project to encrypt all of its at-rest data.

The company announced late last month that it spent more than 5,000 man-hours on the encryption effort, which encompassed about 885TB of data.

The project included a thorough inventory of stored data and was completed in just over a year.

The insurer said it is now encrypting all data on 1,000 Windows, AIX, SQL, VMware and Xen server hard drives; 6,000 workstation hard drives and removable media drives; 136,000 tape backup volumes; and 25,000 daily voice-call recordings.

The 57 hard drives, which were stolen from a leased facility in Chattanooga, Tenn., contained recordings of customer service telephone calls that included varying degrees of personal information on about a million of the insurer's subscribers. So far, there is no indication of any misuse of personal data from the stolen hard drives, according to the company.

"The lessons we learned from the theft led us to go above and beyond current industry standards, and our team has worked tirelessly to put new safeguards in place and encrypt all our at-rest data," said CIO Nick Coussoule in a statement.

– LUCAS MEARIAN

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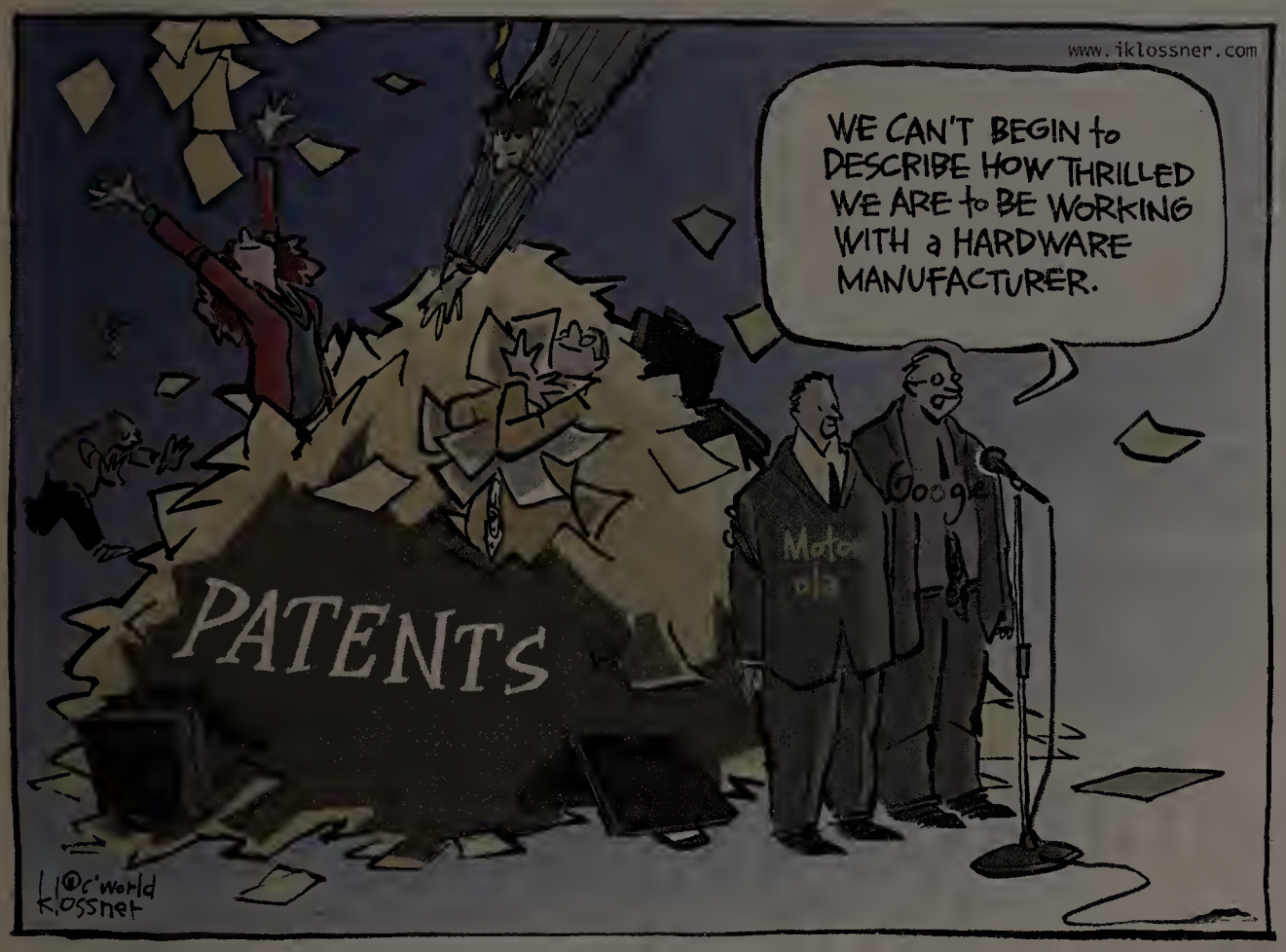


Micro Burst

U.S. data centers consume about

2%

of the nation's energy. Data center energy use has risen 36% since 2005, but that's less than expected.

SOURCE: STUDY BY JONATHAN KOOMEY, STANFORD UNIVERSITY, AUGUST 2011

INTERNET SECURITY

European Group Finds HTML5 Security Gaps

The European Union's computer security agency warned that the draft HTML5 standard may neglect important security issues.

The European Network and Information Security Agency (ENISA) on Aug. 1 released a 61-page document that cited 51 security problems in the draft HTML5 specifications.

"It's the first time anyone has looked at those specifications from a security point of view," said Giles Hogben, program manager for secure services at ENISA.

Some of the security issues can be fixed by tweaking the specifications, while others are risks that browser users should be warned about, Hogben said.

ENISA also recommended "sandboxed," or isolated, browser sessions to protect online financial transactions in one browser window from being hijacked by malware in another open browser window.

HTML5 is curated by the World Wide Web Consortium, which will consider the suggestions and revise the specifications by January.

Application designers and Web developers will use the HTML5 specifications for years to come. The HTML4 specifications, for example, have been in use since 1999.

– JEREMY KIRK, IDG NEWS SERVICE

BUSINESS INTELLIGENCE

Hadoop Works Alongside RDBMS

THE GROWING NEED for companies to manage surging volumes of structured and unstructured data is continuing to propel enterprise use of open-source Apache Hadoop software.

But instead of replacing existing technologies, Hadoop appears to be working alongside conventional relational database management systems (RDBMS), according to a Ventana Research report released late last month.

Hadoop is designed to help companies manage and process petabytes of data. The technology's appeal lies in its ability to break up very large data sets into smaller data blocks that are then distributed across a cluster of commodity hardware for faster processing.

Early adopters, including Facebook, Amazon, eBay and Yahoo, use Hadoop to analyze petabytes of unstructured data that conventional RDBMS setups couldn't handle easily. Ventana's report, based on a survey of more than 160 companies, shows that a growing number of businesses have begun putting Hadoop to use for similar purposes.

The survey found that most of those companies are using Hadoop to collect and analyze huge volumes of unstructured and machine-generated information, such as log and event data, search-engine results and content from social media sites, said David Menninger, author of the Ventana report.

"In two-thirds of the cases, we found that people are using Hadoop for advanced analytics and for types of analysis that they were not doing before," he said.

The technology is much less likely to be used for analyzing conventional structured data such as transaction data, customer information and call records, where traditional RDBMS tools still appear to have an edge, Menninger said.

Despite Hadoop's early promise, the study said, enterprises that use it still face challenges related to issues such as security, clustering and a shortage of people with Hadoop skills.

– *Jaikumar Vijayan*

Outsourced and Fired, IT Workers Strike Back

Laid-off IT pros list their reasons for filing suit against Molina Healthcare, its former CIO and its outsourcer, Cognizant Technology Solutions. By Patrick Thibodeau

ON THE DAY THEY WERE FIRED early last year, about 40 Molina Healthcare IT employees met in a conference room for what they thought was a planning session.

The gathering took place at a time of rising tensions over several issues, including the expanding role of offshore IT contractor Cognizant Technology Solutions.

The Molina workers voiced their concerns to then-CIO Amir Desai after he told them they were all being laid off. "I felt they were expecting us to be asking questions about COBRA and unemployment and all that," said Bonita Shok, one of the laid-off Molina employees. "Instead, we were being quite confrontational about why they were laying us off and keeping all these H-1B workers."

"I have never experienced a group of employees who were so angry," said a human resources manager who was in the meeting but asked not to be identified.

"They felt their work was being offshored," said the longtime HR industry veteran, who had been hired to execute the IT layoffs at the managed healthcare provider.

The workers say their questions weren't answered, so 18 of them filed suit in California state court earlier this year against Molina, its former CIO and Cognizant.

The plaintiffs say they were fired because Molina and the outsourcing company sought to employ workers "whose national origin, race and/or ethnicity was exclusively Indian."

Molina said the lawsuit is grounded in "falsehoods and malicious gossip," while Cognizant said the suit is without merit and vowed to "vigorously contest it." Former Molina CIO Desai, through attorney Edward Raskin, says the lawsuit is itself guilty of "an unfair discriminatory bias." In fact, he noted, "some of the employees who lost jobs at Molina were 'of Indian descent.' "

While what happened at Molina is still in dispute, job displacement because of offshore outsourcing is a fact of life in today's IT workplace.

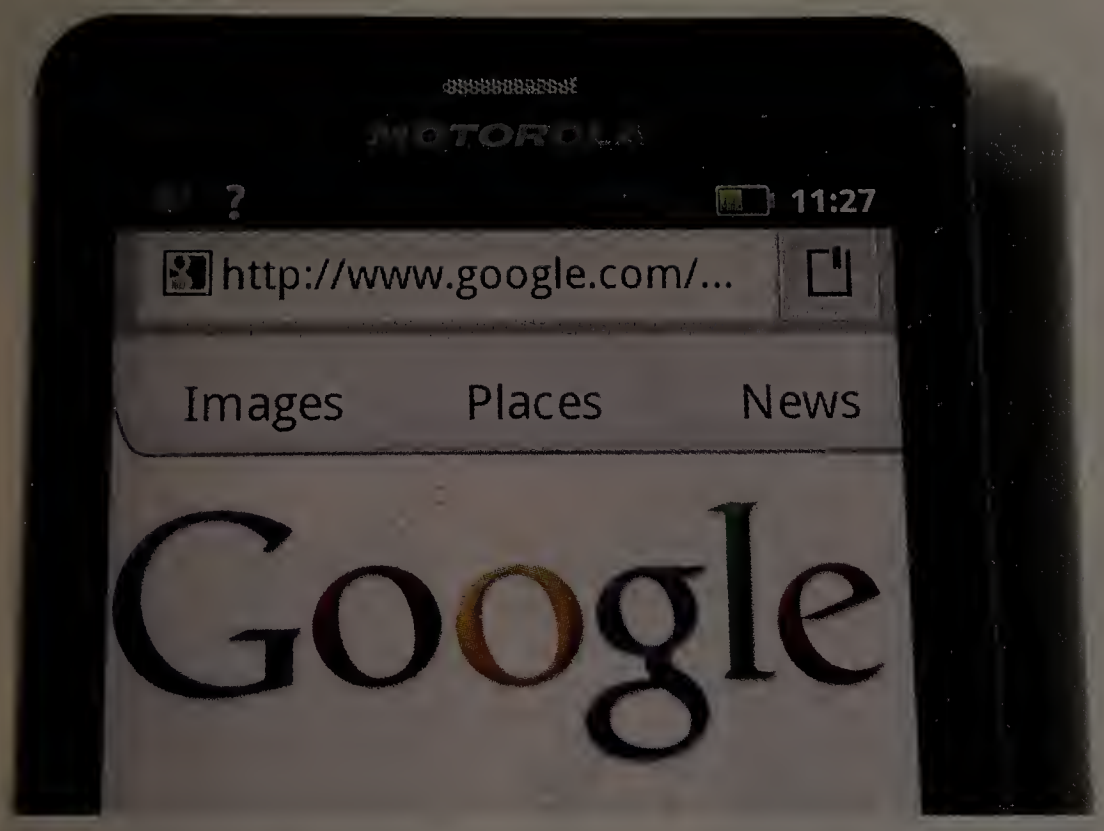
Outsourcing engagements often start when IT services firms bring in workers, typically with H-1B or L-1 visas, to learn the company's processes. Then the work moves overseas.

Molina employees contend that's what happened to them. James Otto, an attorney representing the former Molina employees, claims that about 200 visa-holding workers have been brought into the company. More than a dozen of the plaintiffs, who met with *Computerworld* last month, said Molina was at one time a great place for IT professionals. "There was a feeling of camaraderie" among Molina workers and its few contractors, Shok said.

Around 2007, though, most of the workers' immediate IT managers were fired or laid off while the number of contractors increased. The Molina employees said they were asked to train Cognizant workers and told that their role would shift to new development. However, the workers said, the corporate culture changed for the worse as contractors were added.

"There was a point where I felt we were just being written off," said David de Hilster, one of the laid-off IT workers. In the weeks leading up to the layoff, the training process became increasingly "urgent," he added. ◆

"I have never experienced a group of employees who were so angry. They felt their work was being offshored. — MOLINA HEALTHCARE



Google's Mobile Bet Could Prove Tricky

The success of Google's $12.5B deal to buy Motorola Mobility depends on the company's ability to ease concerns of carriers and device makers, say analysts.

By Stephen Lawson and James Niccolai

> **Competing with licensees is incredibly difficult.** Few have done it successfully.
>
> ANALYST, CURRENT ANALYSIS

GOOGLE'S PLAN to pay $12.5 billion for Motorola Mobility has mobile carriers and smartphone and OS makers scrambling to figure out how the proposed deal will affect them, analysts say.

Google CEO Larry Page said he expects the deal, announced last week, to "supercharge the entire Android ecosystem" and "better protect Android from anticompetitive threats from Microsoft, Apple and other companies" by giving Google ownership of Motorola Mobility's 24,500 patents.

Google said it expects the deal to close by early next year.

Motorola Mobility, which employs about 20,000 people, was spun out of Motorola Inc. early this year. The company is split into two groups: Mobile Devices, which manufactures smartphones and tablet devices, and Home, which makes set-top boxes and other IPTV equipment.

The addition of Motorola's Droid to Google's product inventory will likely create some tensions, at least early on, among carriers that sell the popular smartphone and other Android-based mobile devices, according to analysts.

Relying on carriers to distribute the products of a substantial hardware business will be a new experience for Google, and how the company handles it could determine whether the deal is ultimately successful, said Roger Entner, an analyst at Recon Analytics.

With the exception of the less popular Google-branded Nexus phones, the company has mostly dealt with service providers indirectly through an army of third-party Android handset vendors.

"The challenge is how they will transform from a partnership where they are an equal or a little more than an equal to a relationship where they are a little bit less than an equal," Entner said.

It won't be easy, said Avi Greengart, an analyst at Current Analysis. "Competing with licensees is incredibly difficult," he said. "Few have done it successfully."

Phil Marshall, an analyst at Tolaga Research, suggested that Google could calm some fears of carriers by creating a vertical stack of hardware and software for Motorola phones as a solid alternative to Apple's iPhone.

"When the Apple guy shows up with his turtleneck collar, he's not going to have as much leverage on the carrier if Google is successful, with Motorola, at catching up," Marshall said.

However, he did note that the move could alienate competing Android device manufacturers.

Any moves Google makes that seem to favor Motorola devices could drive top handset makers like Samsung and HTC to consider other operating systems, most likely Microsoft's Windows Phone. "In some ways, the big winner is Microsoft," Greengart said.

Meanwhile, Motorola Mobility's patent portfolio should help shield Google from future legal challenges to Android technology, though it may be too late to fend off lawsuits already underway, legal experts said.

Google never put much value in building its own patent portfolio and was caught off guard by the patent arms race that has come to define the wireless industry. Its deal to buy Motorola Mobility and its patents came just a week after it accused Microsoft, Apple and others of trying to impose a "patent tax" on Android to stifle its runaway growth.

Alexander Poltorak, CEO of intellectual property firm General Patent, said the patents will serve as a deterrent to companies thinking of suing Google or its partners. "Now they will think twice before filing a complaint, because they can be guaranteed Google will strike back," he said. ◆

Lawson *and* **Niccolai** *are reporters for the IDG News Service.*
Mikael Ricknäs *and* **Nancy Gohring** *of the IDG News Service and* **Gregg Keizer** *contributed to this story.*

REUTERS / KEVIN LAMARQUE

THE Grill

Marco Orellana

This innovation leader emphasizes the importance of change management over technology.

How do you spend your spare time? Enjoying nature, particularly walks in the nearby Andes Mountains, and exploring the wine world with visits to vineyards.

Proudest achievement? My greatest pride is my family. Last year, I celebrated 25 years of marriage. I've proudly seen my children grow and become adults. Our littlest son is 10 years old and accompanies us now that the older ones are taking their own path.

What goal do you hope to achieve next? I hope to use the visibility provided by the MIT CIO Award to speed up the digitalization process of mining, generating links between different [players] in the industry to achieve a shared vision.

COURTESY OF CODELCO

EVERY YEAR *the MIT Sloan CIO Symposium recognizes IT leaders who pursue innovative uses of technology to further business objectives. This year's Award for Innovation Leadership went to Marco Antonio Orellana Silva, CIO and executive manager of information, communication and automation technology at Codelco. Corporación Nacional del Cobre de Chile (which translates to the National Copper Corporation of Chile) is the world's largest copper producer. Orellana, who also was recognized as CIO of the Year in 2010 by the Chilean technology community, has focused on modernizing the IT infrastructure in his organization and in the mining industry as a whole.*

You've talked about how your vision is "led 30% by technology and driven 70% by the organization's culture." In our experience, when we have a new project, a new technology and important innovation, in general the technology is not the more important part. If you

Continued on page 10

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MARKET PULSE

As Virtualization Takes Hold, Management Challenges Increase

Organizations that evolve to a service delivery model based not just on infrastructure, but also on applications, will increase their agility and flexibility.

Virtualization continues to gain momentum in many organizations as IT leadership teams look for more efficient and effective ways to manage the data center and deploy IT resources. Thirty-six percent of IT managers responding to a Computerworld Market Pulse Survey say their company has already virtualized half or more of its data center. On average, IT departments have virtualized 37% of the data center – a percentage expected to increase to 51% over the next 1-3 years.

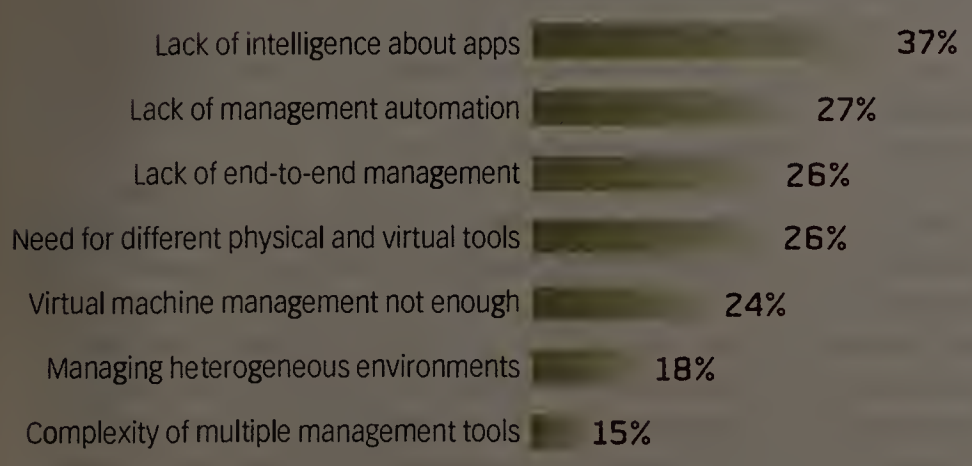
Many organizations are extending their virtualization strategies beyond servers and storage and into core business applications. Over three-quarters (76 percent) of respondents to the Market Pulse study indicated that virtualizing tier-1 applications (e.g., web, email, db, ERP, collaboration, CRM, custom apps) is important to their organization. The most frequent tier-1 applications being virtualized are web applications (49%), email (46%) and database applications (44%).

As virtualization deployments increase, however, so do the challenges of managing virtual environments. Over half (53%) of the survey respondents acknowledged that it is extremely or moderately challenging to administer their virtual systems. The biggest barriers: a lack of intelligence about how applications are performing (cited by 37% of respondents); lack of automation of repetitive management tasks (27%); lack of an end-to-end solution across the virtualization environment (26%); and the need to use different management tools to manage physical and virtual environments (26%). Layering new cloud services into the mix – a logical next step for many organizations – increases the management complexity even further.

For many organizations, the next major challenge is finding management tools that not only provide better views into VM deployments, but also provide an integrated view across physical, virtual and cloud environments. Virtualization has been a key driver of IT's transition to becoming a more nimble, more cost-effective provider of infrastructure and services to the business. But in some cases, unchecked deployments of virtual machines can counter the savings from server consolidation by driving up software and administration costs. As IT organizations continue their evolution, virtualization is not enough.

To increase their agility and flexibility, organizations must evolve to a service delivery model based not just on infrastructure, but also on applications, supported by an ability to meter application performance and service levels. This requires consolidating management functionality across physical and virtual environments, automating IT processes, and pooling resources efficiently across owned and outsourced infrastructure. This highly orchestrated environment – delivering on the promise of the private cloud – will enable IT organizations to significantly increase data center efficiencies while driving more value for the business.

Top Virtual Environment Management Challenges



SOURCE : IDG Research, June 2011

To find out more about the results of the Market Pulse survey, as well as the emerging challenges for managing virtual environments, visit **www.computerworld.com/whitepapers/MicrosoftMarketPulse** to download the free white paper **"Beyond Virtualization: Integrated Management and the Private Cloud"**

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MIT Sloan CIO Symposium co-chairman Ray Chang (left) presents Marco Orellana with the Award for Innovation Leadership.

> **People in IT need passion,** they need to believe in the project.

Continued from page 8

have a good technology person, you don't have problems; you work with companies and providers, and you have the capacity to manage [the technology]. The real problem is related to the capacity of the person to accept the new way of work. The company and the miners are very conservative; it's difficult for them to change the way they work.

How do you manage change? When we work on a new project and it changes the process, we first need a new vision for the miners. What is the new vision, what happens with this project, and what happens [when it's complete]? When we start new projects, we have a lot of conversations with the miners to explain the new scenario, what's the new situation, what happens with your work, what happens with your knowledge. If you do this when you start, the miners adopt the project.

You've been active in forming a partnership between industry, academia and the mining industry to bring improvements to the copper industry. Why do this? In 2003, we [started to] have conversations with the technology companies, like Microsoft, Oracle, SAP and others. These companies said that mining [is] a very interesting business, but other businesses have more volume, more quantity. We created a community to have a strong relationship with the technology industry and make it more attractive for the technology companies to develop solutions for mining. We have more velocity when we have a community working on solutions and we develop solidarity. We are a community for sharing knowledge.

I understand that you're extending technology into the mines themselves and putting technology into the hands of the miners. How does technology help the miners do their jobs? It's very important for us today to automate. In the past, all miners worked inside the mine. Today, miners work remotely. We drive [equipment] from outside the mine. We're working from the city. And [when someone is in the mine], now we know what miners are working what part of the mine; we have miners connected 100% to central operations. We can provide information in real time to this miner inside the mine. For example, if we have a problem inside one area of the mine, we have the technology today to provide all the information on what happened.

What do you see as the key technologies that enable you to bring innovation to your company and the mining industry as a whole? For the future, we are looking at what will happen with consolidation and the cloud. We believe they can create a new synergy, in particular around the capacity of management of different locations. For the mining business process, we are looking at more automation of traditional equipment, like trucks, and increased integration. Another area is robotics. Robotics will change how we work in the mines.

What are the challenges to bringing technology to the mines? When you provide technology in the office, you have the problems related to the buildings. But to provide the technology inside the mines, the physical conditions are very different. You need technology operations for people who work in extreme physical conditions. Second, you need to get technology with the capacity for working when we're connecting the mine with the city. We need security. You need 100% availability. You need high capacity, for example, for high-resolution video. We need high bandwidth. And you need high integration. You have inside the mines, for example, tracks [with] sensors, and they provide a lot of information. You need to capture that information in real time, and all the technology inside the mine needs the capacity for integration. The other difference is the workers. We need to incorporate technology for this type of person; we need technology that is more friendly.

Are there any traits that specifically make a successful technology leader? A technology leader has to have the capacity to work with a very special worker: a person in IT. People in IT need passion, they need to believe in the project. And you need the capacity to change with that technology. In my case, another difference is you need to work in a community that is more extended than the company itself.

— *Interview by* Computerworld *contributing writer* **Mary K. Pratt** *(marykpratt@verizon.net)*

OPINION

THORNTON A. MAY

Getting Beyond Efficiency: IT's New Value Challenge

Historically, IT has hitched the wagon of its reputation to the star of efficiency, but today efficiency is just one part of the total value equation.

Thornton A. May is the author of *The New Know: Innovation Powered by Analytics* and executive director of the IT Leadership Academy at Florida State College at Jacksonville. You can contact him at thorntonamay@aol.com.

IN 1924, EDWARD EYRE HUNT, an aide to future President Herbert Hoover, pronounced that Taylorism was "part of our moral inheritance." "Taylorism" refers to the discipline of scientific management created by Frederick Winslow Taylor, an American mechanical engineer who sought to improve efficiency by analyzing and standardizing tasks. Taylor was the world's first efficiency expert, the original time-and-motion man.

Yet, even at the zenith of Taylor's popularity, not everyone believed that efficiency was the one and only measure around which enterprises should be managed. In *The One Best Way: Frederick Winslow Taylor and the Enigma of Efficiency*, author Robert Kanigel explains: "To organized labor, he was a soulless slave driver. … To the bosses, he was an eccentric and a radical, raising the wages of common laborers by a third, paying college boys to click stopwatches. To him and his friends, he was a misunderstood visionary, possessor of the one best way."

Jeremy Rifkin, in *Time Wars: The Primary Conflict in Human History*, argues that Taylor "made efficiency the modus operandi of American industry and the cardinal virtue of American culture." Taylor, Rifkin declared, "probably had a greater effect on the private and public lives of the men and women of the 20th century" than any other person.

Most organizations in America today remain rooted in a Tayloristic celebration of efficiency. British futurist Richard Scase believes that this has to change: "Future organizations will have to abandon their traditional management structures — operational processes based on hierarchical control and the specialist division of operational job tasks. These structures were and are entirely appropriate for the large-scale production of standardized products and services. What is demanded of employees in these businesses is that they carry out their tasks in an entirely predictable and routine fashion. … The creative employee is a nuisance; to suggest new and different ways of doing things is often counterproductive to operating efficiencies."

Historically, IT has hitched the wagon of its reputation to the star of efficiency. IT was the mechanism whereby processes were standardized and, when possible, automated. In today's intensified environment, where everyone from everywhere is competing for everything, efficiency is just one part of the complex total value equation.

The battle between the forces favoring efficiency and the factions advocating innovation forms the backdrop for modern value creation and destruction. Think of the efficiency camp as tigers and the innovation camp as chickens. These two species do not naturally coexist, and when they bump into each other without tightly calibrated supervision, the result is feathers, fat tigers and no chickens.

Apply Taylorist work-mapping disciplines to the process of innovation and you'll see that innovation is not efficient. (Some forms of innovation are more efficient than others, but innovation is not a candidate for Six Sigma precision.) The reason for this is that the world is not deterministic.

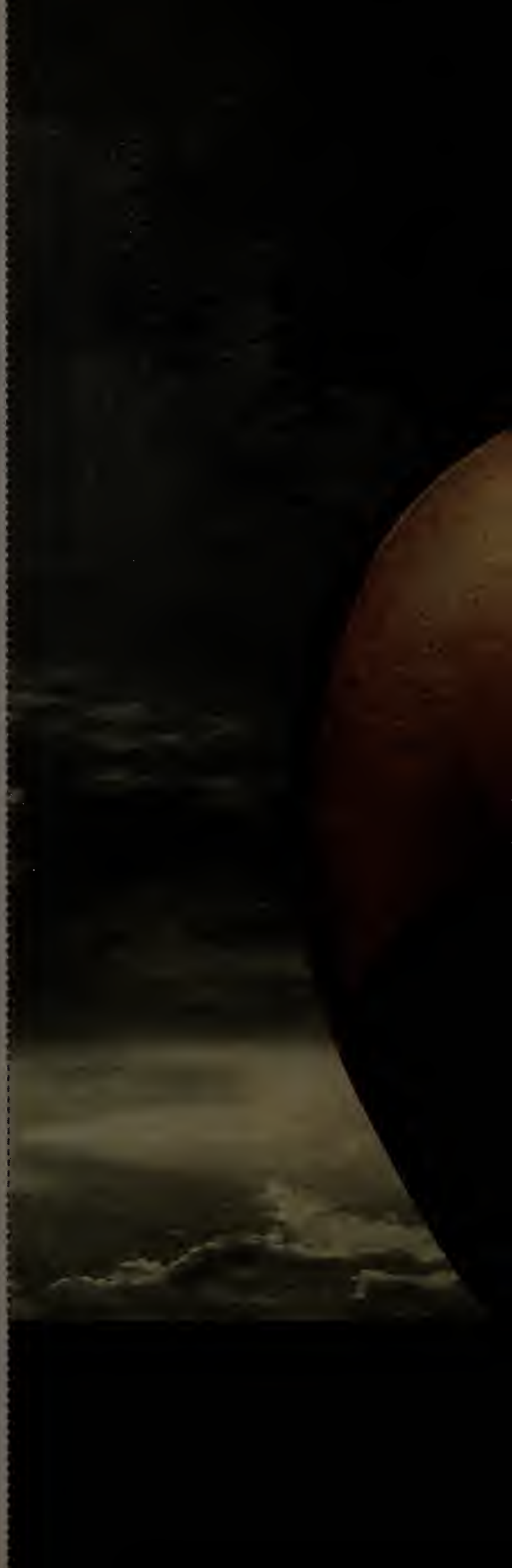
James March, one of the most respected voices on modern decision-making, views management as periods of groping followed by sudden sharp insights that lead to crystallization — a form of "organized anarchy." March characterizes much decision-making as "collections of choices looking for problems, issues and feelings looking for decision situations in which they may be aired, solutions looking for issues to which they might be an answer, and decision makers looking for work."

The future successful enterprise will be both efficient and innovative. ◆

BIG BUSINESS TAKES A [SMALL] BITE OF THE APPLE

Yes, **Apple products** are making their way into **corporate America**. But the numbers are still **relatively small**. **BY ROBERT L. MITCHELL**

ON THE SURFACE, USAA looks like a prime example of how Apple is making new inroads into large enterprises. The financial services company has deployed more than 500 iPhones and 300 iPads, has about 200 Macintosh computers, and it's considering bringing in more Macs to displace some of its Windows desktops.



MICHAEL GIBBS

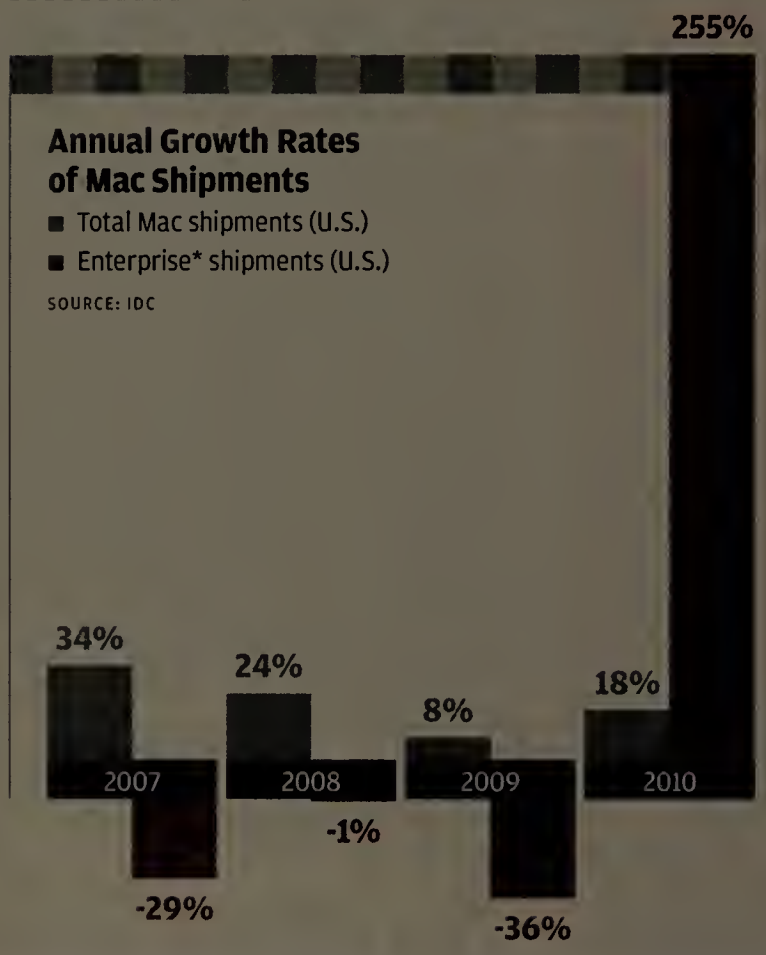
Big Growth, Small Numbers

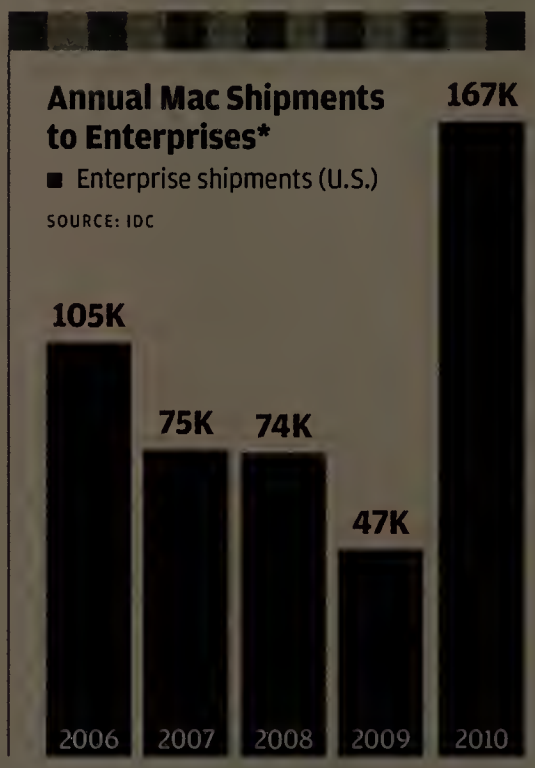
APPLE SAW 255% GROWTH in unit shipments of Mac desktops and laptops to the enterprise last year, according to IDC. While that sounds like a major uptick, the percentage is misleading because Apple's shipments to enterprises suffered a steep decline in 2009 during the recession (even though Apple's total Mac business grew by 8% that year).

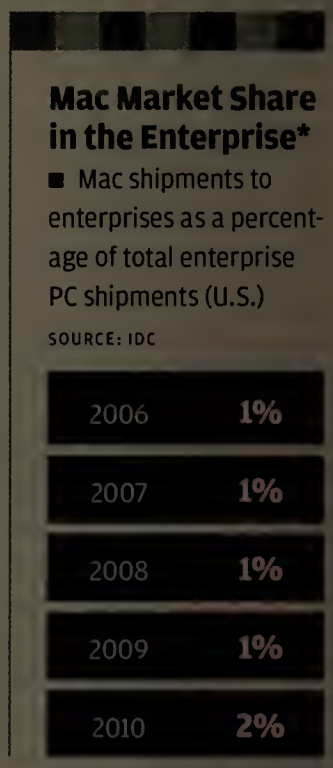
And while the 167,000 units shipped to U.S. enterprises last year represent a record for Apple, that's just 2% of the more than 9 million personal computers of all types that were shipped to enterprises in 2010.

During the recession, Apple's reputation as a premium brand – and the fact that it doesn't offer a low-end product line – may have worked against it with enterprise customers. From 2006 to 2009, shipments of Macs to the enterprise took a nosedive, dropping from 105,000 to 47,000 units. In contrast, overall Mac sales grew by double digits during that period. "The Mac was too expensive while the economy was trying to get back on track," says IDC analyst David Daoud.

– ROBERT L. MITCHELL







*NOTE: IDC defines enterprises as organizations that have more than 500 employees.

San Antonio-based USAA has also released a customer-facing app for iPhones and iPads, and it's considering developing others for internal use. "There seems to be a simmering demand for them, and some good business cases," says Mike Pansini, assistant vice president of IT infrastructure architecture at USAA.

But as is the case at many large companies, USAA's relationship with Apple is more measured than it might first appear.

The iPhones and iPads have been limited to the executive management group — USAA has no plans at present to expand their use more broadly — and its 200 Mac desktops and laptops, mostly used by developers, represent a small fraction of USAA's inventory of personal computers. The rest of its information workers — some 23,000 people — remain solidly on the Windows platform.

It's certainly true that Apple is making inroads into large enterprises. In a recent *Computerworld* survey of 367 IT managers, 73% of the respondents said they're providing or supporting Apple products in some way. But 25% still aren't supporting even one iPhone, Mac or iPad (and 2% didn't know if they were). The 143 largest enterprises in the survey — those with more than 1,000 employees — had the same ratio: 73% support an Apple product; 27% don't.

Although many enterprise IT organizations are accommodating user-owned or company-issued iPads and iPhones, they're providing carefully controlled access to a limited set of corporate IT resources, such as the Internet and corporate e-mail.

Apple is also making headway with corporate desktops and laptops: 55% of the survey respondents support at least one Mac, and 60% support MacBooks. But in most of those cases, the IT shops are supporting 100 or fewer Apple machines. And the Mac's penetration into large businesses is miniscule when compared with the number of Windows-based machines ordered each year.

Furthermore, IT managers say Apple isn't always supportive of their needs, and the *Computerworld* survey shows that many of the obstacles Macs have always faced in large organizations still exist, including the following:

- Mac versions of enterprise applications either don't exist or lag behind releases for Windows.
- There are few tools for managing Macs on a large scale and integrating them into a Windows-centric enterprise.
- The perception remains that Apple products are expensive.
- IT managers say that service and support options aren't up

to enterprise standards.

- Apple doesn't provide a product road map to help IT managers make plans.
- Enterprises have limited opportunities to negotiate prices for Apple products.

At the same time, the survey and interviews with enterprise IT executives indicate that Apple's position has improved in some areas:

- More businesses are buying or building platform-agnostic applications that can accommodate Apple products.
- Enterprise-class management tools for Apple products continue to evolve.
- Apple's prices are becoming more competitive.
- The trend toward Web-based enterprise applications has made integrating Apple products easier.
- In the tablet market, competitors arguably have yet to offer a product that's a better value than the iPad.

Apple still doesn't play in the low end of the desktop and laptop markets, but it's much more competitive than it once was on the types of units enterprises tend to buy, says Laura DiDio, an analyst at market research firm Information Technology Intelligence Consulting (ITIC). Mac products, which once sold for a 30% premium over comparable PCs, have come down to earth. "Apple doesn't get a lot of credit for that," she says.

But IT executives tend to see Apple as a provider of consumer-oriented devices, not a full-on enterprise partner. "In the Windows space, we've got a full-time Microsoft support team that is very engaged in what we do. With Apple, they haven't matured into that yet," says USAA's Pansini.

On the desktop side of the business, an iPhone/iPad "halo effect" may have been partially responsible for a 255% increase in Mac desktop and MacBook sales to enterprises in 2010, as reported by IDC. But that figure is somewhat misleading. Shipments of Mac products to large businesses still represent less than 2% of the overall enterprise PC market in the U.S., according to IDC figures. "Apple's market share is absolutely insignificant," says IDC analyst David Daoud.

Enterprise IT's Concerns About Apple

Which of the following are issues for you when it comes to Apple products in the enterprise?

46% Limited ability to negotiate on Apple hardware and software pricing.

44% Apple's mobile devices don't support Flash.

41% Enterprise-class service and support offerings from Apple are not up to our requirements.

37% Apple offers little or no road map as to its future product plans.

33% Apple doesn't provide management and security tools for its products.

28% Software for Macs lags behind Windows versions.

26% Lack of a second source for computers and parts.

Base: 243 IT managers at U.S companies that support Apple products for business use; multiple responses allowed

SOURCE: *COMPUTERWORLD* SURVEY, JUNE 2011

Nonetheless, Mac sales to the enterprise are up sharply, relatively speaking. More than a quarter (27%) of the *Computerworld* survey's enterprise IT respondents who support Apple products said support for iOS devices had either sparked interest in adopting Macs or had resulted in greater adoption of Macs. "I wouldn't say they're buying Macs in droves," says Gartner analyst Michael Silver. "But more Macs are being supported as part of bring-your-own-computer initiatives."

However, when it comes to media tablets, Apple's iPad owns the category, accounting for more than 90% of the 300,000 units shipped in the U.S. for commercial use in 2010. Increasingly, users are picking their own smartphones and tablets and are asking to use them for work. IDC expects the number of commercial shipments of media tablets to jump to 1.3 million this year. "It's become an unstoppable force," says Silver. "It's gotten harder to say no."

While most large organizations aren't supporting large-scale deployments of Apple products, Genentech is an exception. The IT department at the South San Francisco-based biotech company supports more than 2,500 Macintosh computers — about half of the desktop population — and some 8,000 iPhones. And it has made the most of user interest in iPads and iPhones, developing apps for tasks ranging from CRM to purchase order approvals and expense reporting.

That's driven in part by the fact that Genentech allows users to choose their own desktop computers. Even so, Macs tend to be used in groups that are less dependent on Windows applications, such as sales, marketing and research. "It's more challenging to deploy the OS X platform in other areas," says enterprise architect David Lee, although Genentech does support some Macs that need access to Windows applications by using virtualization software such as Citrix XenDesktop or VMware Fusion. That software layer, however, adds complexity and cost.

"Our No. 1 recommendation is to look at the applications first,"

> **"We've got a full-time Microsoft support team that is very engaged in what we do. With Apple, they haven't matured into that yet."**
>
> **MIKE PANSINI,** ASSISTANT VICE PRESIDENT OF IT INFRASTRUCTURE ARCHITECTURE, USAA

Silver says. "If users need access to Windows applications, they should be running a Windows machine."

Mike Reed, an Apple solutions practice manager at IT services provider Forsythe Solutions Group, sees it differently, arguing that having parallel applications isn't always necessary. For example, Microsoft Vizio files can be read by OmniGraffle on the Mac. "It's less about the app and more about interacting with the data," he says.

> **With HP, we know what's coming out six to 12 months from now. With Apple, you don't have a clue.**
>
> **MICHAEL KAMER,** MANAGER OF TECHNOLOGY INTEGRATION SERVICES, ST. LUKE'S HEALTH SYSTEM

Whispering to the Enterprise

Faced with the need to respond to a steady uptake of its products by large businesses, Apple has quietly restructured its enterprise division, focusing more narrowly on "Fortune-level" companies and pushing more of its enterprise business through the reseller channel and its own online sales group, according to an executive at one of Apple's business partners, who spoke on the condition that he not be identified. "They don't have as large a sales force focused on the enterprise as they used to," he says.

Unlike the way other vendors approach the enterprise market, Apple's strategy is to pursue more of a "whisper" campaign. When contacted for this story, Apple declined to comment or even acknowledge the existence of its enterprise program, let alone explain the services it provides to its largest business customers.

Although Apple doesn't want to talk about it, enterprise customers and service providers say that the company does indeed have an organization that caters to the enterprise and that it typically assigns a dedicated account representative, sends an engineer to the customer site for an initial assessment and provides some integration services.

"Apple does a terrific job of tech support for its own devices in a corporate setting, but integration and interoperability with other platforms can be problematic," DiDio says. "They realized that they had to have an enterprise strategy." Last year, Apple created a new business partner certification, the Apple Authorized System Integrator, and anointed four companies — Forsythe Solutions Group, Milestone Technologies, Agilex and Unisys — to handle most of that integration and support work.

For technical support, however, corporate IT shops still need an AppleCare Preferred or Alliance agreement. "They'll fly an engineer out to our business to get the lay of the land. But they're not stopping on your doorstep any time you have a problem," says Ben Greisler, principal at Kadimac Corp., an Apple professional services provider. Some enterprise customers work with Apple's telesales group or Apple's retail stores.

"We're seeing an expansion of business-related services across all touch points, whether it's service or sales or retail," says Reed. Taken together, he says, "it's the 'enterprization' of Apple."

Perhaps. But Apple's enterprise strategy is still immature, IT executives say. "They're most interested in selling product and not in adapting how they do business to meet the needs of the enterprise," says a vice president of IT at a Fortune 100 company that uses both Apple mobile and desktop products, who declined to be identified.

Mum's the Word

Apple's legendary secrecy — its unwillingness to share its product road map, even under nondisclosure agreements — makes Andy Wang's job harder. Wang is an enterprise architect at Genentech. "Part of my job is to plan 12 to 36 months out. When you don't get anything from Apple, that makes for challenging planning," he says. IT executives regularly receive such briefings from vendors like Microsoft and Hewlett-Packard.

"With HP, we know what's coming out six to 12 months from now. With Apple, you don't have a clue," says Michael Kamer, manager of technology integration services at St. Luke's Health System, a healthcare provider in the Kansas City, Mo., area that's testing a system that would let doctors access clinical apps from their own iPads.

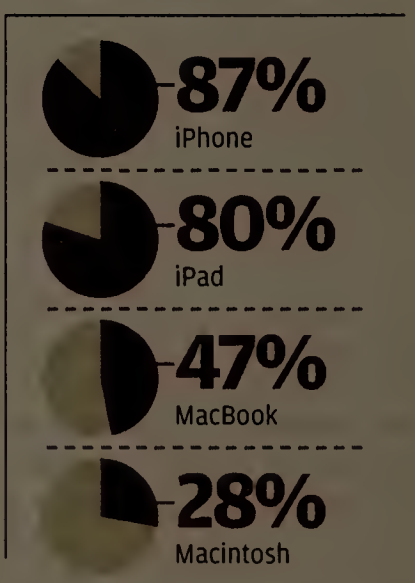
"We're guessing which capabilities will be available when," adds Greg Schwartz, senior vice president and CIO at USAA. After the iPad 2 was released, USAA began work on a new version of an online banking app that lets iPad 2 users photograph and submit checks for deposit using the built-in camera. "We didn't know when the iPad 2 was going to be released. Otherwise, we would have had it ready," he says.

Apple's consumer-focused approach to product licensing and support also creates headaches. Although Genentech has developed its own iPhone apps and delivers them through an internal app store, it still must renew its certification for those applications with Apple every year. "That's very tedious," says enterprise architect David Lee. "We have a cordial and collaborative relationship, but enterprises are treated more like consumers."

Apple also lacks a corporate account model that enterprise customers can use to centrally manage the acquisition of software from its App Store. Instead, each

Bring Your Own

Which Apple products do you support through a BYOC (bring-your-own-computer) program?



Base: 185 IT managers at U.S companies that support Apple products for business use; multiple responses allowed

SOURCE: *COMPUTERWORLD* SURVEY, JUNE 2011

purchase is tied to an iTunes account, which in turn is tied to an individual and that person's email address, rather than to a role or physical device.

"The enterprise has fundamental issues here. You don't want to have an individual account per device for the licensing and management of apps," says Mark White, CTO of Deloitte Consulting's technology practice.

But for now, that's exactly what many businesses do.

Other businesses have negotiated directly with software vendors, bypassing the iTunes store. "It's not a generally solved problem yet," says White — for any of the mobile vendors.

Enterprise-class security is another concern. At St. Luke's, protecting data on iOS devices is a big issue. Kamer says the iPad doesn't natively support the FIPS 140-2 encryption standard, so he has to work around that. "That's one reason why we don't allow them on our internal network," he says.

Management Tools: A Big Obstacle

Unlike Microsoft, Apple doesn't offer a suite of management tools for its products, relying instead on third-party vendors and integrators to pull together a framework for securing and managing Apple devices at the enterprise level.

"Many of the Mac-based tools are built by small or lesser-known third-party ISVs, and many of those are smaller, point-type solutions, which may not scale in an enterprise setting," says ITIC analyst DiDio.

DiDio calls the management tools issue "the biggest impediment to deploying Macs en masse in the enterprise."

And she's not the only one who thinks so. "The tools for managing a large population of Macs are hard to come by. That's the truth," says a Fortune 100 IT executive who declined to be named but says he has examined the options.

Such sentiments are what convinced Mac software vendors to form the Enterprise Desktop Alliance a few years ago. "There are good tools available for integrating Macs into enterprises standardized on Windows," argues EDA President Reid Lewis. The challenge is to educate IT managers on what's available, he says.

Deloitte's White says it isn't a question of whether you can integrate Macs but how much work it takes to get the job done: "In a large enterprise, at scale, can you get the job done? Yes. Can I do it without a lot of additional skills, capabilities and tools? No."

> **The reality is that most companies are not going to have a choice. They're going to have to work with [Apple's] business model.**
>
> **GREG SCHWARTZ,**
> SENIOR VICE PRESIDENT AND CIO, USAA

Expect more integration work with Macs, he says.

When it comes to interoperability with existing tools for managing Windows environments, the options are even more limited. The tools are enterprise-class, says Charles Edge, lead engineer at 318 Inc., an Apple-authorized reseller and professional services provider. But he acknowledges that "they're not as well integrated with tools for other platforms as they could be."

Many of the same issues come up when trying to manage enterprise apps, enterprise app stores and mobile data on iPhones and iPads, says White. "Those are workable today but not a slam dunk. It requires significant integration work and control frameworks."

A Matter of Focus

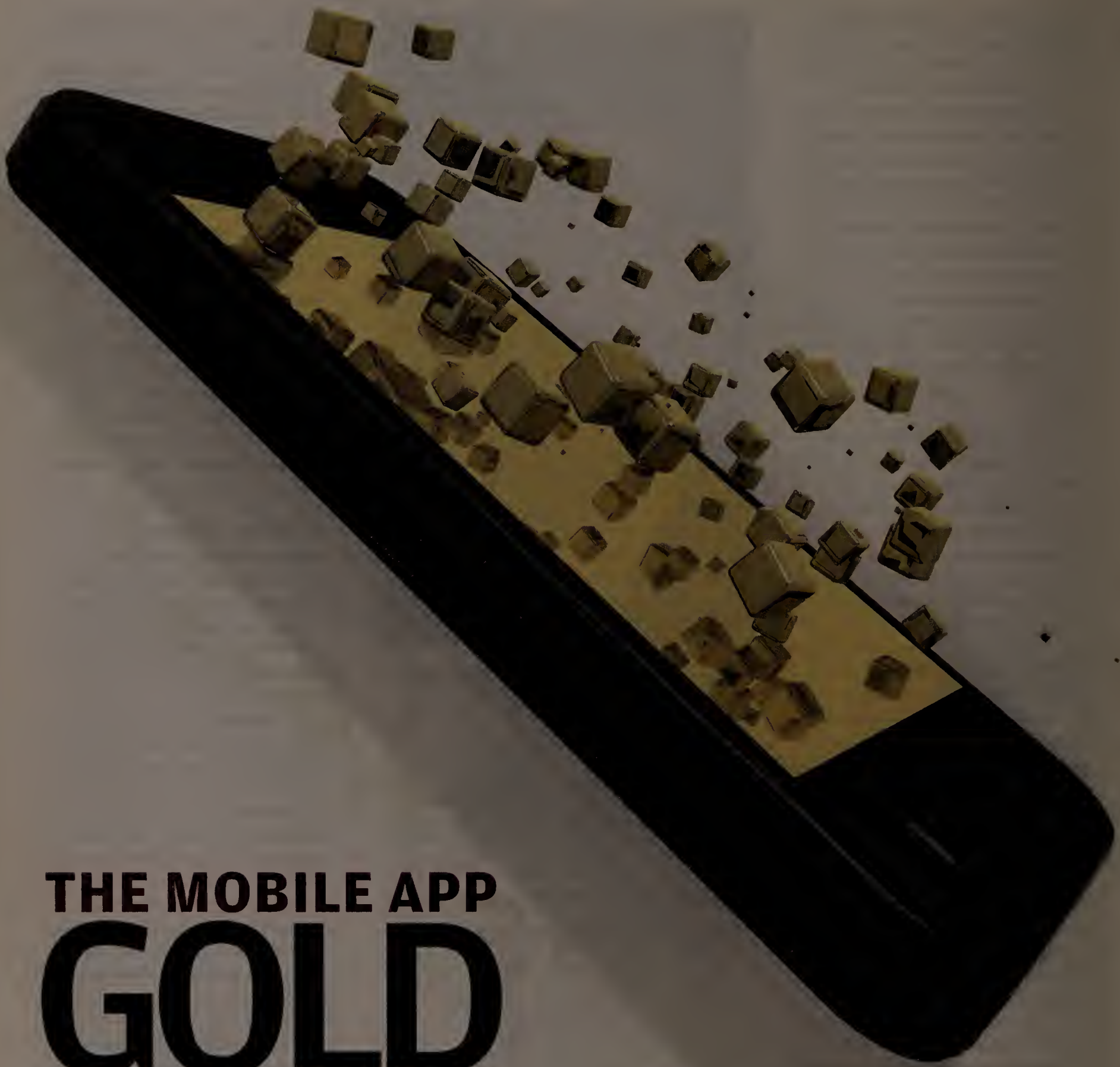
From Apple's perspective, the enterprise is a niche market, and a very small one at that. Shipments of Macs to enterprise customers, for example, amounted to just 3% of all Mac sales in the U.S. last year, according to IDC.

The company's discontinuation of its Xserve server line last year further underscores the point that Apple's focus remains on its bread and butter — the consumer — and that there are limits as to how far it's willing to go to satisfy the demands of enterprise customers.

"Apple doesn't want to change its business to accommodate enterprises," says Silver. "They want to sell to the enterprise with their current business model. And to some extent, that's working."

For now, at least, it's the enterprise, not Apple, that has to bend. Demand from users of iPads and iPhones, and a push to allow users to bring their own computers to work, requires some level of accommodation by IT. "The reality is that most companies are not going to have a choice. They're going to have to work with that business model," says USAA's Schwartz.

But accommodation has its limits. To Kamer at St. Luke's, Apple isn't an enterprise partner the way that companies like Microsoft and HP are. "Apple is changing the game on how we deal with them as a vendor due to the popularity of their devices." But, he adds, "this is why we do not plan on purchasing their devices for the enterprise. Bring-your-own-computer is the only way we can see them being integrated. But even this has many challenges from a management and security standpoint." ◆



THE MOBILE APP GOLD RUSH

As companies scramble to write apps for smartphones and tablets, the talent is in short supply. **BY BETH STACKPOLE**

AS DEMAND SURGES for apps to run on iOS, Android and whatever operating system will power the next wave of smart mobile devices, companies are facing a dearth of mobile development talent. For IT professionals with programming skills, that gap represents a fresh opportunity to embark on a career makeover.

Continued on page 20

FOTOLIA / MICKEY HO

COMPUTERWORLD

From the editors of *CIO, Computerworld, CSO, InfoWorld* & *Network World* –

Your Strategic Guide to Converged Infrastructure

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ANY application development professionals are likely to obsess over what tools and technology they should choose to develop a mobile app. While that's important, "it is less than half the battle," says a recent report by Forrester Research analyst Mike Gualtieri.

What you really need is a mobile app that people will love to use. "If users don't love your application, then they will simply move on to another application that they do love – or use no app at all," the report says. The reaction you're seeking? "This app is awesome!"

Gualtieri's report says that "lovable mobile user experiences" must have the following qualities:

UTILITY: A mobile app must deliver functions that allow customers, employees or business partners to achieve their goals - using the ingenuity and capabilities of your business.

USABILITY: Your mobile app must be extremely easy to use.

DESIRABILITY: The experience of using the mobile app should produce positive emotions. "You'd think that useful and usable would be enough – but they are not. Users also want to enjoy their experience," Gualtieri writes.

Developers should identify their target mobile users, interview those users about their needs, observe them "in their natural habitat," design the app and then "validate your design in a mobile context to make certain your users are happy and that they love your app," the report says.

Well-designed mobile apps help mobile users do something that furthers the organization's goals, the report notes. For example, Liberty Mutual Insurance offers customers an Apple iPhone app that streamlines automobile accident claim processing.

The app walks customers through the process of collecting information from the other driver, taking a photo of the damage, mapping the location via GPS and sending the report. Liberty Mutual benefits because it gets accurate information, can quickly start processing the claim and can help the customer through a stressful situation.

What's to love about a mobile app for auto accident insurance claims? "Perhaps nothing," the report notes, "until you are in a fender bender."

– MITCH BETTS

Continued from page 18

To put the demand in perspective, consider that Apple racked up $1.78 billion in app sales in 2010, and global mobile app sales are forecast to hit $4 billion this year, according to IHS, a market research firm in Englewood, Colo.

Who is developing all of those apps? In its recent "America's Tech Talent Crunch" study, IT job site Dice.com found that job postings for Android developers soared 302% in the first quarter of this year compared with the first quarter of 2010; postings for iPhone-related positions rose 220% in the same time frame.

Elance.com, a website for freelancers, reports comparable demand: In the first quarter of 2011, there were 4,500 mobile developer jobs posted on the site — an increase of 101% over the number of similar job postings in the same quarter last year.

The total number of job listings on the site expanded at a rate of 52% in that same period, indicating that mobile development as a career segment may be growing twice as fast as the overall job market, according to Ellen Pack, vice president of marketing at Elance.com.

> **There is more demand than supply because there aren't enough great mobile developers out there.**
>
> **ELLEN PACK,** VICE PRESIDENT OF MARKETING, ELANCE.COM

It's not just tech companies that are on the prowl for mobile development talent. All kinds of product and service companies are scrambling to come out with apps, just as they were working a short while ago to establish a presence on social networking sites.

"It's become one of the boxes you have to check to be a successful brand," Pack says. And that reality translates into pent-up demand for app developers. "It's one of those areas where there is more demand than supply because there aren't enough great mobile developers out there," she says.

While there are ample pools of Web and Java development talent, professionals with expertise building native apps for Apple's iPhone and iPad, the BlackBerry or any of the newer Android devices are in short supply because of the relative newness of those platforms.

Developers and designers who fully understand the constraints and the opportunities afforded by the smaller real estate and touch interfaces of the smart-device platform are in high demand.

Market watchers say it's the ability to grasp mobile's new usage rules — not simply the ability to master new programming skills — that separates those with an affinity for mobile development from those who just don't get it.

"When you're building Web applications, [you] have the whole

desktop. There are things you can get away with from a design point of view that simply don't translate to a mobile device," notes Eric Knipp, an analyst at Gartner. "It's not just about making things smaller or splitting things up into separate screens. Developers have been trained to think that more features equates to better applications, but on mobile devices, that's simply not true."

Finding Talent

All signs indicate that there is a healthy demand for mobile app developers but that demand isn't translating into widespread offers of full-time jobs on corporate IT teams just yet. That's because many companies with lean IT budgets aren't ready to commit to hiring highly specialized, and therefore pricey, mobile development talent.

Some organizations are outsourcing mobile app projects to consulting firms and boutique development shops until they have a more pronounced need.

That's Aspen Skiing Co.'s strategy. To date, the Colorado ski resort operator has come out with a couple of mobile apps, including a tool that lets managers conduct ad hoc smartphone-based surveys of customers around the resort and another that gives customers access to an array of resort data, such as weather conditions, lift status and daily events.

Since Aspen Skiing doesn't consider software development a core competency and can't accommodate a large IT staff, outsourcing mobile development seemed like the most efficient plan — at least in the short run.

"Mobile is such a rapidly changing environment; so much of it is tied to what content management tool you use or what devices you want to support," says Paul Major, managing director of IT at Aspen Skiing. "Going outside helps us keep pace."

Supermedia, which provides marketing and advertising services for small and midsize businesses, also initially thought outsourcing would be more cost-effective than in-house development. But a couple of years into its mobile initiative, Supermedia realized that the discipline was far too central to its business model to continue paying outside consultants to develop apps, according to Michael Dunn, the company's CIO. A little over a year ago, the firm decided to set up an internal team to build regular updates and to enhance its apps to support the growing number of mobile platforms.

Aware of the shortage of skilled development talent, Supermedia took a number of steps to avoid being caught in a crunch.

First, it cross-trained two key internal Java developers on mobile platforms, and then it seeded the rest of its fledgling team with recent college graduates. "The market took off so fast, and there was such a huge demand for developers. This let us hire immediately, and it's far more affordable," Dunn explains.

The seasoned Java developers came up to speed pretty quickly on specific Android- and iOS-related skills, thanks to their sets of core skills, Dunn says.

With the new domain expertise under their belts, the veteran developers were then able to mentor incoming college graduates, allowing Supermedia to leverage its investment in their training. The new hires "have core development skills and some knowledge of mobile app development — maybe not on a commercial scale, but they've done it in an academic environment as a project," Dunn explains.

Currently, Supermedia has 10 mobile app specialists in its 150-person developer group, which is part of an enterprise IT staff of nearly 300 people.

The User Experience

The new design requirements of mobile platforms represent a potentially more difficult transition: In addition to recognizing that they will be designing apps for the smaller real estate of smartphone screens, developers have to understand how users interact with their devices and grasp the need to deliver highly targeted functionality.

"The way people interact with a laptop or a desktop is different than the way they interact with a smart device," says Hap Aziz, director of the Rasmussen College School of Technology and Design, which was among the first universities to launch a curriculum with a specific focus on mobile application design and programming.

"People using a smart device don't think of themselves as 'computer users,' therefore you can't use the same conventions you'd use in developing desktop software," Aziz explains. "Drop-down menus and elaborate help screens just don't work on a smart device — it's more like working an ATM machine at the bank."

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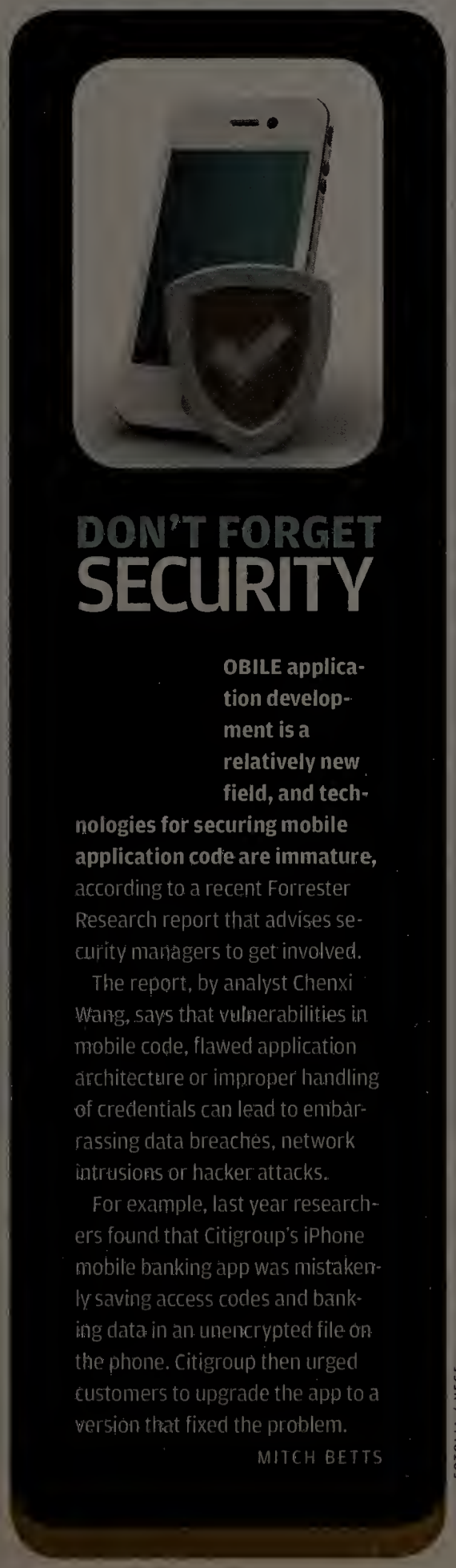

DON'T FORGET SECURITY

OBILE application development is a relatively new field, and technologies for securing mobile application code are immature, according to a recent Forrester Research report that advises security managers to get involved.

The report, by analyst Chenxi Wang, says that vulnerabilities in mobile code, flawed application architecture or improper handling of credentials can lead to embarrassing data breaches, network intrusions or hacker attacks.

For example, last year researchers found that Citigroup's iPhone mobile banking app was mistakenly saving access codes and banking data in an unencrypted file on the phone. Citigroup then urged customers to upgrade the app to a version that fixed the problem.

MITCH BETTS

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Continued from page 21

Still, it doesn't take a rocket scientist to make the transition — just someone with the commitment to do what it takes to learn new technologies and master the new conventions. Going back to school is one option, and in addition to full-time programs like the one Rasmussen offers, there are countless undergraduate, continuing education and certificate courses on hot subjects such as HTML5, object-oriented programming, Java, and iOS and Android programming.

Learning by doing is the next best approach, and one likely favored by the bulk of today's IT professionals, according to Nick Dalton, owner of 360mind, a software development consultancy that specializes in mobile apps.

Would-be mobile app developers need to immerse themselves in the platform — and that means swearing off the PC for a while, he says. They need to make a full commitment to doing as much as possible in the mobile environment to experience firsthand both the constraints and the opportunities. "On a smaller device that doesn't have much memory and has a weaker processor, you have to be more conscious of how you're programming," says Dalton. "Those things can't come from theory; they can only come from experience."

> **In today's global outsourcing economy, you don't want to be stuck with outdated skills.**
>
> **NICK DALTON,** OWNER, 360MIND

Dalton, a 25-year IT veteran, spent much of his career as an enterprise Java architect designing back-end systems and customer-facing applications at companies such as Nissan and Toyota. When the iPhone was first released, Dalton undertook a self-directed crash course to master the iOS software development kit. Once the Apple App Store was announced and the market for mobile app developers took off, Dalton left corporate IT and started 360mind.

Today, 360mind employs nearly 20 mobile app developers and has moved away from building simple novelty apps to working on corporate initiatives that link both Apple iOS and Android apps to back-end enterprise systems. For example, 360mind was the development muscle behind fast-food chain Chipotle's ordering app, which lets customers order and pay for meals on their phones.

With no end in sight for mobile development opportunities, Dalton says this latest "gold rush" sends a clear message to fellow developers, system architects and Web designers: "In today's global outsourcing economy, you don't want to be stuck with outdated skills."

And mobile app work has an added bonus, he says. "If you're coming from a multimillion-dollar enterprise server project where every decision takes forever," Dalton says, "working on these small, self-contained projects [for mobile devices] is a lot of fun." ◆

Stackpole, *a frequent* Computerworld *contributor, has reported on business and technology for more than 20 years.*

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The Race to Cloud Standards Gets Crowded

Are there too many groups on the same track? BY PATRICK THIBODEAU

THE RISE OF CLOUD COMPUTING has led to a strong push from IT leaders at many major companies to develop standards that address issues such as security and data portability in the cloud.

But the early push for standards is beginning to resemble a NASCAR race — everyone is driving on the same track but sitting in different cars.

Multiple organizations are in pursuit of the same checkered flag: a set of standards that will facilitate the adoption of cloud computing technologies.

The latest organization to join the growing list of standards groups is the IBM-backed **Cloud Standards Customer Council,** which announced its steering committee last month.

It's clear that the business community wants cloud standards. What is less clear is whether multiple efforts will make the standards push more effective or result in conflicting approaches that lead to a wreck.

The various cloud standards groups do share a key attribute: They all enjoy business buy-in. For instance, Cloud Standards Customer Council members include Citigroup, Costco Wholesale and Deere & Co.

The **Open Data Center Alliance,** an Intel-backed standards organization formed last year, includes BMW, Deutsche Bank, JPMorgan Chase, Marriott International, Shell and Disney Internet Labs. Overseas companies with seats on the alliance's steering committee include China Life, a Beijing-based insurance company, and China Unicom, a government-owned telecommunications company.

Meanwhile, the **Cloud Security Alliance** membership list includes Coca-Cola and eBay.

"Our intention is to be extremely collaborative with all the various organizations that spawn out there," says Marvin Wheeler, chief strategy officer at cloud vendor Terremark and chairman of the Open Data Center Alliance.

Wheeler says the push for standards by the multiple groups shouldn't be competitive, but complementary. The multiple efforts, in the end, may help all the groups achieve their respective goals, he says.

Clout With Vendors

The Open Data Center Alliance is counting on brute force to change the cloud computing market. The alliance says its membership represents more than $100 billion in annual IT spending power, some of which will go toward cloud computing.

The alliance is developing "usage models" that IT managers can employ when negotiating with cloud vendors. The usage models address many of the issues that annoy users or keep them from adopting cloud technologies.

For example, one usage model aims to fix problems caused by the lack of an agreed-upon method for creating and deactivating virtual machines.

"How you start, stop, create, suspend a VM really shouldn't be a selling point for [cloud vendors]," says Andrew Feig, executive director of financial services firm UBS's Technology Advisory Group and an alliance board member. "However, it does cause us a lot of pain to actually have to do that four different ways for four different vendors."

Among those involved in the Cloud Standards Customer Council is North Carolina State University.

"I would be a lot more worried if we only had one group looking at this at this point," says Sam Averitt, a former IT director at the university. He retired last month but plans to remain active in cloud and standards efforts.

Averitt says the cloud market is so big and diverse that it needs different voices.

"There is going to be a convergence process over time," says Averitt, "and if done well, it will work out fine." ◆

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Security Manager's Journal

MATHIAS THURMAN

Keeping the DMZ Safe

A security manager has to be vigilant about what goes into the network's exposed portion, and how it's all configured.

Trouble Ticket

» The network DMZ contains too many resources, putting the company at risk.

» Review every resource now in the DMZ, and set policies that avoid future problems.

WHEN YOU'RE IN CHARGE of a company's security, you'd better be on the approval list for resources placed in the DMZ.

The DMZ is the portion of a network that exposes applications and infrastructure to the world. Typically, it contains things like corporate websites, storefronts, VPN concentrators and Outlook Web access.

Before I came to this company, any server placed in the DMZ had to be available to the public Internet. Now, that's a scary requirement. Since my arrival, I've expanded the criteria considerably.

the discussions about security! **computerworld.com/blogs/security**

Although we have no storefront and only one main corporate website, an Nmap scan of our externally accessible DMZ resources yielded almost 50 individual items. And many of those resources were unknown, unpatched or lacking in even basic security configurations. That sort of thing is great ammunition when I'm criticized for my in-depth interrogations about new candidates for the DMZ or modifications to existing DMZ infrastructure.

In sticking with my No. 1 philosophy, most of my questions relate to the rule of least privilege. For example, I almost immediately ask, "What will this resource be used for, and who will need access?" One time, the answer to the question about access to a server was, "Just two of us." I was able to convince them that an internal development network was a better place for that server.

For those servers that do make it into the DMZ, I try to restrict availability to ports 80 (http) and 443 (https). Prior to this rule, we had all sorts of ports open in the DMZ, including Remote Desktop, which is probably the top method for unauthorized access. I've also created a security baseline using data gleaned from various websites. For example, the Center for Internet Security has some decent security configuration documents and tools for various devices and operating systems.

All DMZ resources must be managed, meaning we can do inventory tracking, configuration management, security patching and so on. Of the 50 DMZ resources identified in my last audit, only eight were managed.

Next, if there's no need for a DMZ resource to communicate with a back-end server (aside from monitoring, log management and general administration), then the firewall should block access.

I also want every DMZ resource to have an identifiable business owner. My investigation of current DMZ resources revealed that more than 15 servers and associated applications had no identified owner.

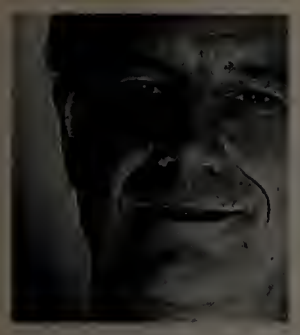
I also require that certain security, application and event logs must be enabled for all DMZ resources, and they must be configured to send logs to our security event and incident management tool.

I also found that we had research and development DMZ resources (otherwise known as lab machines) comingled with production DMZ resources. I immediately had the network team create a separate virtual LAN and protect that segment with the DMZ firewall. Lab resources are sometimes considered the Wild West, and I wanted to ensure that there were strict controls protecting the production DMZ as well as the internal network from the lab resources. The challenge here is that sometimes a lab resource needs to connect to a machine on the internal network for business reasons. Each case has to be tackled individually.

My next task is to take these and other requirements and author a DMZ policy. In setting up policies, I have to take into consideration where the company sits on the overall security spectrum. I recognize that if we enabled all security settings, resources could be rendered unusable. The trick is to strike a balance between security and usability based on what's at stake. This is otherwise known as risk management. ◆

This week's journal is written by a real security manager, ***"Mathias Thurman,"*** *whose name and employer have been disguised for obvious reasons. Contact him at mathias_thurman@yahoo.com.*

"Before, any server placed in the DMZ had to be available to the public Internet. Now that's a scary requirement.



BART PERKINS

More and More, It's All a Game for Today's Trainers

> Although IT staffers are often veteran gamers, they generally lack the knowledge necessary to identify a good training game.

IF YOUR COMPANY TAKES TRAINING SERIOUSLY, it might want to turn it into a game. A growing number of organizations are starting to use video games designed to train users in new skills, hoping to reduce training time while improving long-term information retention.

There are pitfalls at this stage, since training game products (and many of the companies that produce them) are relatively new. Supplier solvency could be an issue. And although IT staffers are often veteran gamers, they generally lack the knowledge necessary to identify a good training game. At a minimum, make sure a proposed training game is designed to do the following:

Engage players. A good game should foster the desire to play again. Boring games don't get played often enough to teach the material they were designed to deliver. Producers of entertainment games recognize the importance of player engagement and use recognition, rewards and other techniques to entice players to play repeatedly. Business games must contain similar features. Moreover, training games must be compelling to players with differing skill levels. Effective games must offer additional challenges as skill levels increase.

Teach job-related skills. Good training games provide opportunities to develop and practice new skills (handling a call center request, for example, or answering product questions). The best games use both positive and negative skill scenarios. A sales game might demonstrate a competent salesperson giving complete product information to a customer but also a rude salesperson providing superficial or wrong answers. Practice and reinforcement of appropriate responses help players move information from short- to long-term memory.

Monitor progress. Effective games provide continuous feedback to players. Game metrics should parallel actual job metrics. For example, metrics for a sales training game might include units sold, unit price and number of new customers. Feedback boosts engagement and simplifies assessment of progress. Trainers can quickly determine when someone has not grasped important concepts and provide timely assistance.

Deploy and update quickly. Choose a platform that allows rapid modifications as skill-training requirements change. Training games must be quickly adaptable to changes in market conditions.

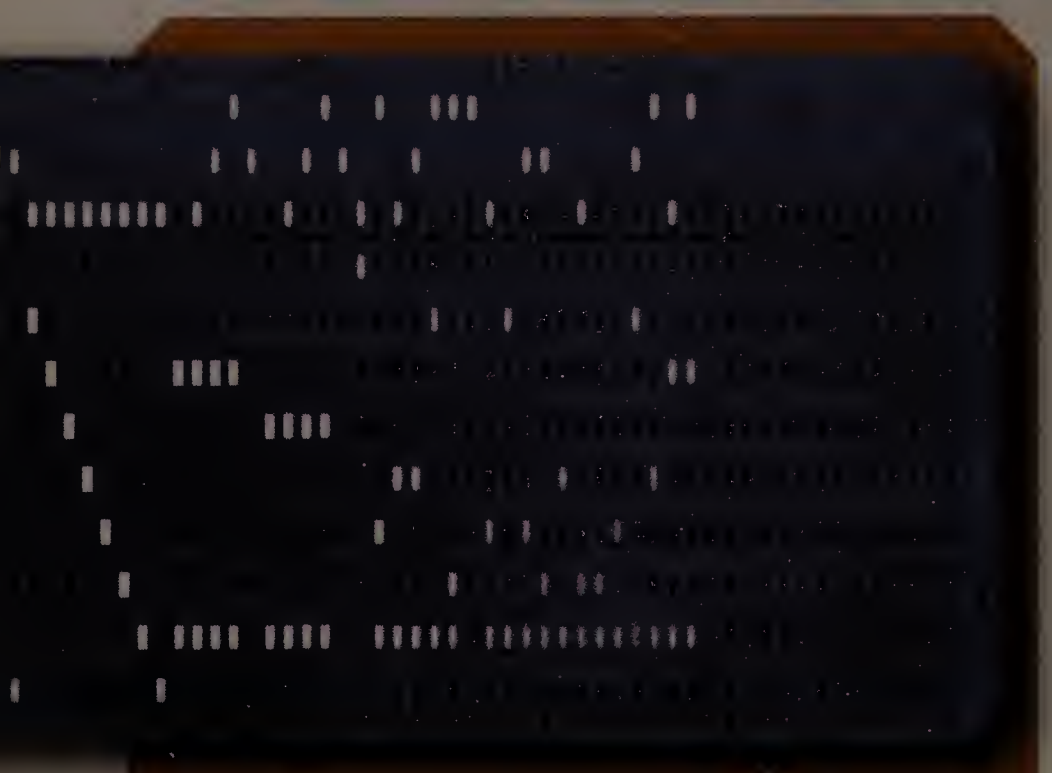
Limit costs. Since training games address real situations, it's natural to want realistic visual effects and avatars, but those features can be prohibitively expensive. For the next several years, few training games (beyond flight simulators and military war games) can justify the high cost of extreme realism. Stay focused on substance, not form.

Provide accessible interfaces. Success or high scores in a training game should reflect an actual increase in skills. Make sure the user interface is not heavily dependent on previous gaming experience, or you may assess irrelevant skills — and perhaps leave your organization open to litigation for discriminating in favor of gamers.

Choose your supplier carefully. Games produced by academically oriented companies may convey relevant information but be boring. Conversely, games produced by entertainment-oriented companies may be engaging but fail to train effectively. Look for a balanced game that blends entertainment and education and that also reflects real-world business perspective and constraints. For maximum game effectiveness, make sure relevant business units approve the game's effectiveness. Then let the games begin! ◆

Bart Perkins is managing partner at Louisville, Ky.-based Leverage Partners, which helps organizations invest well in IT. Contact him at BartPerkins@LeveragePartners.com.

Career Watch



ARE YOU OBSOLETE?

On his *Computerworld.com* blog, Glyn Moody, the Geezer Geek, offers some Jeff Foxworthy-inspired punch lines that address "that sad moment when we geezers realize we no longer are the hot technologists on the block." Here are some highlights:

YOU MIGHT BE A HAS-BEEN IF . . .

- You don't have ANY of the skills for job postings on Monster.com.
- You still keep a few blank punch cards around in case of an emergency.
- You remember "IBM and the seven dwarfs" and can name at least three of the dwarfs.
- You used to work for one of the dwarfs.
- You think a sell phone is really for making phone calls.
- Pieces of paper that are 14 in. by 11 in., have a row of holes down each side, and have alternating light-green and white stripes can bring a tear to your eye.

ARNOLD REINHOLD

ASK A PREMIER 100 IT LEADER

David O'Berry

The self-described **"reformed CxO/CIO"** *answers questions about the need for the CIO to be part of the team and more.*

Our CIO is always stressing how important it is that we, his direct reports, work together as a team, but he doesn't act like he's part of the team himself. There are a lot of us, but he doesn't even know all our names, and he seems more interested in hobnobbing with other C-level officers. I see the value of those relationships, but am I wrong to expect him to display a bit more solidarity with his direct reports? I can see right out the gate that your question is not going to have me making friends with the C suite. The unfortunate truth is that leaders are often born, not made. I would tend to believe your current CIO falls into the "tried to make a leader and did not succeed" category. The team comes first, period. If you truly care as a leader, then it shows, and it directly shows in the accomplishments of your team. Otherwise, you are just looked at as someone using others to get to the next rung in the ladder. "Do as I say, not as I do" is a hypocritical recipe for disaster, especially when "teamwork" concepts are thrown around. Trust matters, and he needs to earn it, or he will never be anything but a placeholder for the next person. I always say, "I will be led; I will not be herded." If I feel that way, why would I ever expect anyone who worked for me to feel differently? Your CIO needs to wake up or change careers to something that he can do by himself instead of with a team.

If you have a question for one of our Premier 100 IT Leaders, send it to **askaleader@computerworld.com**, and watch for this column each month.

I was laid off from my job as a project manager about five months ago. I've had a few interviews, but I haven't been enthusiastic about the jobs. They seem to offer only more of what I've already done. My wife says this is no time to be fussy, and I understand her point, but I want to give this more time and try to find something with broader horizons. Would I be better off accepting a job now and closing off this gap on my résumé, or should I hold out a bit longer? Tough call. It will depend on the length of time the gap is and what you are doing to fill it. For instance, if you have legitimate work, even for a nonprofit or as an independent consultant, then you can maybe wait a bit longer. At the same time, perfection is the enemy of progress, and though your age and financial state are factors, it is probably better to close the gap. At the same time, use your known skills and abilities to add more to whatever organization you join. If you don't go in assuming it's a dead end, a path may open up to something you never considered.

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That Would Do It

Support pilot fish gets an e-mail from an associate: *My BlackBerry has gone kaput! The ear speaker stopped working. I can only use it in external speaker mode. Who do I need to arm-twist to get it replaced?* Fish sends a reply instructing the user to power off his phone, pull the battery, hold the power button down to drain any residual power in the unit, then replace the battery, turn it on, and call back if it still doesn't work. Then fish gets an instant message: *I figured it out.* Followed by a phone call: "Do you want to know what the problem was?" Sure, says fish, figuring the user got it wet or something. "I was at Starbucks, and I was sitting very near my car, which had my Bluetooth headset in it – turned on and still paired and connected to my phone."

There's No School Like Old-School

Flash back about 30 years to when this pilot fish is working for a major retailer – and his boss has an amazingly good record of bringing projects in on time and on budget. "Those were the days before we had all the fancy metrics and project planning tools that are available today. So one day I asked him to enlighten me on his technique for accurate project estimating," says fish. "He said he would go into the meeting with user management and lay out the objectives and scope of the project and engage in some discussion. He'd then say, 'This will take six months and cost $1 million.' He would then sneak a peek around the room and, if no one had fallen off his chair, he'd quickly add, 'for Phase One.' "

Critical, Redefined

Support pilot fish gets a call from a user: "My application won't run under the new operating-system version that you just released. It's a critical application. Can you get it to work?" OK, says fish, I'll take a look. And with the code in hand, he starts trying to get the application working. But after trying every reasonable combination of configurations and settings he can think of, fish has to conclude the user is right: This app just won't run. He calls user back and explains that something must have happened between the new version of the OS and the old one, and he promises to test the app with the old version to see if he can tell what changed. User: "Oh, that's OK. The app didn't work with the old OS version, either. I was hoping you could get it to work with the new version."

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SCOT FINNIE

This Is No Time To Skimp on Security

One fundamental change is that the motives for security breaches have multiplied.

HAVE YOU BEEN PAYING ATTENTION? Security threats around the world have changed over the past few years. One of the fundamental differences is that the motives for security breaches have multiplied.

Where once they were almost entirely a criminal means of monetary gain, today they are also driven by international tensions, ideological vigilantism and the desire to embarrass organizations and governments — with individuals, groups and even countries using electronic means as a form of aggression.

Who knows what groups like Anonymous, AntiSec and LulzSec will target next? Who knows what other countries or nationally focused groups might target U.S. interests — public or private — using cyber sabotage and warfare techniques, such as those reportedly set in motion by Stuxnet.

Recent examples of companies, organizations and websites that have been hacked include Booz Allen Hamilton, the CIA, Citigroup, Epsilon, Google, Honda, the IMF, Lockheed Martin, NASA's Jet Propulsion Laboratory, NASDAQ, PBS, the Pentagon, RIM's BlackBerry blog, RSA, Sony and the U.S. Senate.

On Aug. 2, security vendor McAfee released a white paper in which threat researcher Dmitri Alperovitch chronicled a hacking campaign dubbed Operation Shady RAT that penetrated 72 organizations in 14 countries over the past five years. Alperovitch wrote: "I am convinced that every company in every conceivable industry with significant size and valuable intellectual property and trade secrets has been compromised (or will be shortly), with the great majority of the victims rarely discovering the intrusion or its impact."

McAfee competitors Kaspersky and Symantec criticized the report for implying that the Shady RAT hackers had done something sophisticated and out of the ordinary. While that suggests that security vendors are more concerned with outdoing one another than with showing how their systems can protect enterprises, no one is disputing that long-term hacking not only exists but is commonplace.

An Aug. 5 *Computerworld* story by Gregg Keizer ("Shady RAT Hacking Claims Overblown, Say Security Firms") quoted Symantec researcher Hon Lau: "While [the Shady RAT] attack is indeed significant, it is one of many similar attacks taking place daily. Even as we speak, there are other malware groups targeting many other organizations in a similar manner."

Still not convinced that your company is surrounded by a rising tide of security threats? In its May 2011 report on worldwide and U.S. security, IDC said that enterprises "already know that antivirus tools don't work against advanced persistent threats (APTs) and other malicious threats and that they are vulnerable to becoming part of the 70% of organizations that have been breached in some way. . . . The changing and persistent nature of those with malicious intent makes it very challenging to stay ahead of security threat management."

IT organizations need to rethink their security protections, and especially their assumptions about who and where threats come from and what may be motivating them. Five-year-old assumptions could easily get a company into trouble.

As if all that were not enough to contend with, IT budgets are tight at many companies. Here, then, are two considerations to keep in mind as you head into budget season: First is the question of how much a security breach would cost your company. Second is the fact that seven out of 10 companies have already experienced a security breach. ◆

Scot Finnie is *Computerworld's* editor in chief. You can contact him at sfinnie@computerworld.com and follow him on Twitter (@ScotFinnie).

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